

Flight Test Safety Committee

Update to the SETP S&B 2019
Tom Huff, Chairman



Video Intro: FT ERP

Claude:

After Tom's intro, lights come down and roll video clip. Tom takes podium and describes "what you missed..."

2019 FTSW Charleston, SC

- ▶ Emergency Response Program
 - “Big 3:” People, Protect, Participate
 - Family assistance
 - Business continuity
 - Media considerations
 - Sustaining activities
- ▶ Safety Assurance in Flight Test
 - Methods and compliance
 - Standards and auditing
 - Continuous improvement and learning
- ▶ Flying Magazine’s Peter Garrison dinner keynote



FTSC WEBSITE – FTSW Podcasts

2:12 PM Mon Apr 1

LTE 82%

Risk Management Fundamentals Part One - Pat Moran

Flight Test Safety Workshop



Risk Management - Lessons Learned In Experimental Flight Testing - Trevor Cross

Flight Test Safety Workshop



Risk Management

Risk Management for

To Claude for
Real-time demo:

“Claude, that safety assurance brief sounds like a great brief for my upcoming flight test lunch and learn. Can you take me there?”

Since we last met..

Incidents / accidents from 2018 S&B

Detroit Flying Cars (Sanjay Dhall) – Dec 2018



No fatalities

Mirage 2000 – Feb 2019



2 Fatal

Piper M600 – Feb 2019



No fatalities

Julian Knott – Mar 2019



One Fatal

Bell 206B – Apr 2019



2 Fatal

Boeing/Aurora Passenger Air Vehicle (PAV) – June 2019



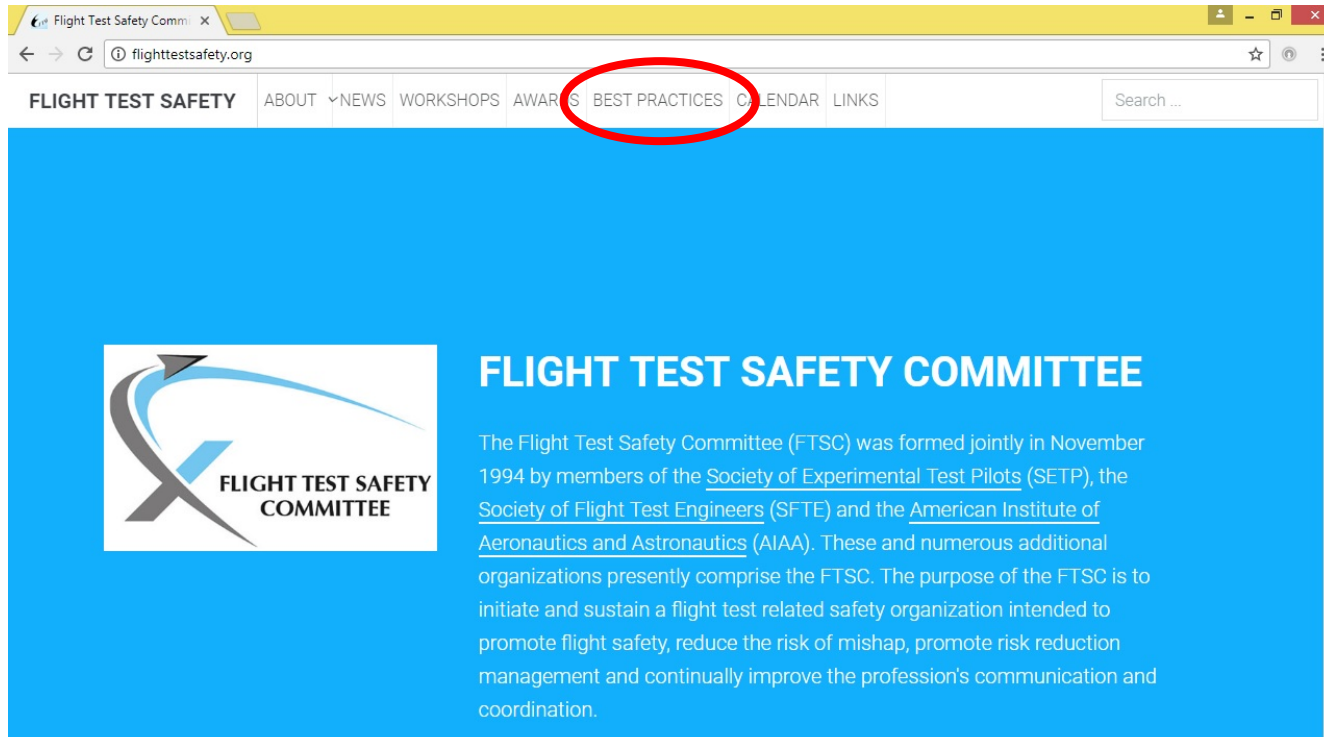
No fatalities

FTSC – What's Been Done

- ▶ NTSB recommendation closure re: Bell 525
- ▶ Flighttestsafety.org additions:
 - Flight Data Recording Guidance
 - ERP Drill Guide
 - Air Demo Guide (in review)
- ▶ Launched Monthly Newsletter
- ▶ Resurrected Euro FTSW



FTSC WEBSITE – flighttestsafety.org



To Claude for
Real-time demo:

“Claude, we’re starting a new program and the recorder guidance may help me convince the program manger on necessary test data capture.
Can you take me there?”

Flight Test Safety Fact



Published for the Flight Test Safety Committee

Accidental First Flights

January 20 was the 45th anniversary of the first flight of the [General Dynamics YF-16 Fighting Falcon](#), but this certainly was not the first or the last time that an unsuspecting pilot discovered the aircraft was airborne during a taxi test. At least two such taxi tests turned into first flights in the waning months of 2018, but there is an even older historical precedent.

[Flying Car Destroyed in Accidental First Flight](#) On December 14, 2018, the Detroit Flying Cars WD-1 took off unexpectedly during its third taxi test of the day at Willow Run Airport, near Detroit, Michigan. The crash destroyed the vehicle and injured the pilot, Sanjay Dhall, co-founder of the company, who said this: "This accident was the result of an error of judgement on my part. No taxi testing should ever be undertaken without setting the C.G. in the appropriate zone."

["XP-82 Takes Accidental First Flight"](#) A restored Twin Mustang conducted a high speed taxi test on December 31, 2018, and it turned into an unexpected first flight. Comments from the pilot indicate a lack of forethought and test discipline.

[Historical Precedent](#) These kinds of documented accidental first flights extend as far back as July 27, 1955, when Tony LeVier found himself airborne during a U-2 taxi test. The incident ended with minor damage to the aircraft. Whether or not other first flights were accidental is still an open question.

Flight Test Safety Committee President, Tom Huff, recommended that when engaging in these kinds of taxi tests, "First flight readiness—including vehicle preparation, TM room, chase and emergency response—should be employed." Incidentally, the FTSC maintains a list of recommended practices, including one for First Flight here: http://flighttestsafety.org/images/Flight_Readiness_Review_FRR_2-2012.pdf. These incidents highlight the importance of this endeavor, of telling others about the Flight Test Safety Committee and its resources, like the Recommended Practices and other resources maintained at flighttestsafety.org.

It also raises an important question: how do we ensure that these products are useful? **We need to hear your voice.**

Flight Test Safety Committee

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It Didn't Work

"It didn't work for 412 TW Test Safety, but it was worth the exercise." That was the conclusion presented by Lowell Bishop (412th Test Wing Test Safety) and Capt Michael "T-Rex" Tibbs (419th Flight Test Squadron) at the 2018 SFTE Annual Symposium. In their presentation, Systems Theoretic Process Analysis (STPA) Applied to the Air Force Test Safety Process, they built on the foundation of previous work done by LtCol Montes, USAF TPS, which he discussed at the 2017 SFTE Annual Symposium.

STPA is a hazard analysis technique that implements a top-down systems engineering approach to create traceable safety requirements and mitigations. The STPA models the safety process with control and feedback loops. The basic process of using the STPA follows six steps.

1. Define the system (drives scope of effort)
2. Identify system accidents and hazards: Undesired and unintended effects
3. Draw functional control structure
4. Identify unsafe control actions
5. Identify accident scenarios (context)
6. Create design & safety requirements or constraints

According to Bishop, the AFTC sought ways to innovate and improve its existing process, but they needed to mitigate the risk of the new method. A software block upgrade (regression test) on the B-1B provided a convenient test case. Since software block upgrades are familiar, the traditional test safety process was simple to prepare. The test team used the STPA process in parallel with existing, approved safety procedures. The STPA process required approximately 80 hours of analysis and planning, compared to 8-16 hours for the existing method.

The test team had several significant findings in addition to this difference in required man-hours. The STPA process did not include an explicit step for the assessment of overall risk, and the test team had to use existing procedures. Additionally, the STPA did not discuss corrective actions after a hazard occurred. Overall, the current method produced similar results in less time, but they speculate whether this was due to familiarity with the test and plan to continue experimenting with the method.

This cannot be overstated. The importance of this experiment was the deliberate effort to innovate the AFTC test safety process. In particular, they believe that implementation of the process earlier in the acquisition cycle may identify design features that may contribute to hazards and should allow for redesign, if necessary.

(continued)

FTSC Newsletter



NASA Flight Test Safety Database

The screenshot shows the NASA Flight Test Safety Database website. The browser address bar displays "https://tsdLgr.nas.nasa.gov". The page features a navigation menu on the left with links to "THA", "Application Data", "Centers of Test Expertise", "Reference Data", and "Output Builder". The main content area includes a "Welcome" message, a circular diagram with "THA" in the center and segments for "REFERENCE DATA", "APPLICATION DATA", and "CENTERS OF TEST EXPERTISE", and a "Database Search" section. The footer contains the NASA logo, contact information, and a list of supported browsers.

FLIGHT TEST SAFETY DATABASE

Home | Contact | Account

Login | Register

Search Database:

Welcome




For years the International Flight Test community has had a need for easy access to flight test maneuver descriptions, test hazards and hazard mitigation techniques.

This database is a step in that direction and builds on similar efforts by the Flight Test Safety Committee, The Society of Experimental Test Pilots, The Society of Flight Test Engineers and other professional organizations. Our object is to identify and document hazards and mitigations associated with flight testing and provide a compilation of the flight test industry's corporate knowledge regarding flight test safety risk assessment. Where applicable, the database cross references FAR guidance from Parts 23, 25 and other flight-test related sections. It also discusses typical industry risk levels assigned to specific types of tests. All data has been reviewed by at least 2 persons with extensive Flight Test and/or Aviation Safety Experience. We hope you find this tool useful, and solicit your feedback and contributions as we work to keep it up to date.

Data Items were last added or updated on 11/12/2015

Database Search

Partners

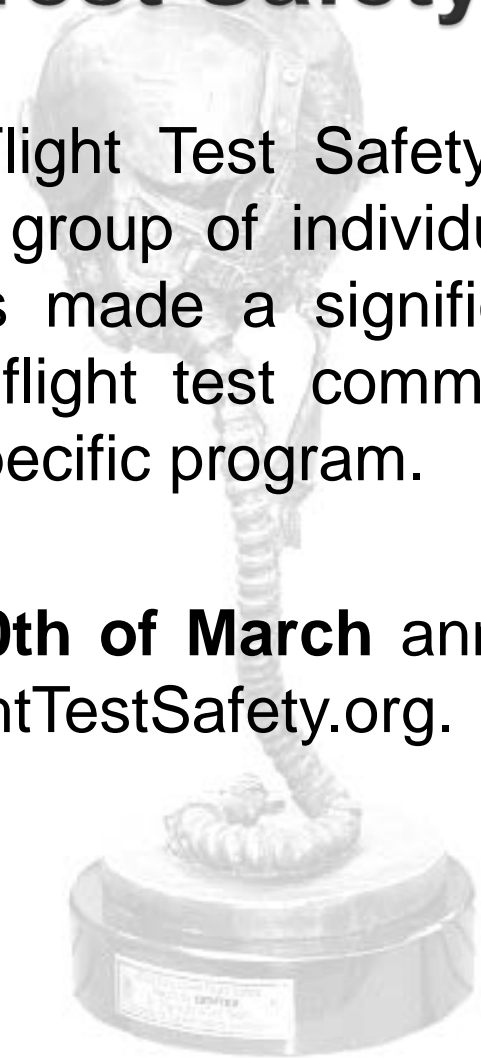
  

Site Last Updated On: 11/22/2010
Webmaster: Ed Lamprecht
NASA Official: Barton Henwood

Supported Browsers:
- Freedom of Information Act
- President's Management Agenda
- Privacy Policy & Implementation Notices
- Inspector General Hotline
- Office of the Inspector General

Tony LeVier Flight Test Safety Award

- ▶ The Tony LeVier Flight Test Safety recognizes a single individual, or small group of individuals, who, over some period of time, has made a significant flight test safety contribution to the flight test community as a whole, an organization, or a specific program.
- ▶ Nominations due **30th of March** annually. Download form on SETP.org or FlightTestSafety.org.



Gerard Guillaumaud

European Flight Test Safety Award

- ▶ The European Flight Test Safety Award recognizes an individual, usually a test pilot or flight test engineer, who made significant contributions to the safety of flight test. The award is presented at the European Flight Test Safety Workshop



2020 Flight Test Safety Workshops(!)

North America:
4-7 May
Doubletree Tech Center Denver, CO



2020 Flight Test Safety Workshops(!)

European:
14-16 October
London, England



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